

65th US ARMY RESERVE REGIONAL COMMAND
ARIM OFFICE
FORT BUCHANAN, PUERTO RICO

INSTALL EMERGENCY GENERATOR SYSTEM
PFC. LUIS F. GARCIA, USARC
YAUCO, PUERTO RICO

PREPARED BY:

ARCHITECTURAL & ENGINEERING SERVICES DIVISION

PROJ MGR :


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SECTION 01110N

STATEMENT OF WORK

1. DESCRIPTION OF WORK:

1.1 Work to be done: The general intention of this project is to install an emergency generator of 125 KW, three phase 120/ 208 volts, at Yauco USAR Center,. and all related work.

1.1.1 The contractor is responsible for verifying final dimensions at the job site during the pre-award site visit(s). The Directorate of Contracting (DOC) will coordinate with the ARIM Directorate to assure the access to the indicated area for inspection and measurements. In addition, the contractor shall coordinate and schedule the entire project and electrical outages with the Contracting Officer and ARIM.

1.1.2 The work consists of, but is not limited to, the following:

Disconnect and reinstall of all existing electrical wiring of the existing feeders lines

- a. Install a 125 KW three (3) phase 120/208volts pad mounted generator at the site and adjacent to an existing 3-50 K.V.A. pole mounted transformer cluster.
- b. Install a four hundred (400) amperes automatic transfer switch (ATS) with nominal voltage 120/208 volts, three (3) phase NEMA 3R. with the complete system, and accessories on a precast pedestal.
- c. Supply and install additional electrical materials, conduits cables connectors elbows and a concrete protection for conduits emerging from ground.
- c. Supply and install four (4), three inch diameter (3") pvc conduit from the existing panel board to the existing wood pole the new ATS.
- d. Supply and install one (4) three inch (3") conduit for power and one (1) three quarter inch (3/4") conduit for control from the ATS to the generator. All conduits installed underground shall be Poly-vinyl chloride (PVC) and at thirty-six (36) inch below finished grade. Conduits aboveground shall be rigid galvanized. Provide a minimum of eighteen (18) inches concrete protection above finish grade.
- e. Supply and install a precast concrete pad according to drawings including layout, excavations, backfill with four (4") inch sand layer and install a 6 mil polyurethane barrier.
- g. Contractor shall provide transportation, crane operator, personnel and rigging equipment for this operation.
- f. Install two sets of four three hundred fifty (4# 350) XHHW 600 volt insulation secondary wires from the existing Distribution Panel to the ATS, and from the ATS to the generator.
- i. Install the generator and connect all secondary wires coming from the ATS. Also, re-connect the wires coming from the existing panelboard.
- j. Contractor shall install at least six (6) three quarter inch by four inch (3/4" X 4") long drop-in anchor bolts to tie down generator.

- k. The Contractor shall record and test all wires and equipment before requesting final inspection.
- l. Contractor shall provide all equipment, tools, materials, labor, insurance for the performance of this Contract.

1.2 The project is located at the U.S. Army Reserve Installation of Yauco USAR Center.

1.3 Contractor shall submit for approval all materials to be used in this contract with Material Safety Data Sheets (MSDS), and as stated in the Submittal Register ENG Form 4288- R, Jan 1997.

Submittals in quadruplicate shall be delivered to Contracting Officer within fifteen (15) calendar days after Contract award, and using the Material Approval Submittal Form SOFB-DOC 3000-R-E, Feb 2002.

Contractor shall install a project identification sign in accordance with attached sketch. Location shall be approved by the Contracting Officer.

Contractor shall be required to commence work under this Contract within 20 and not more than 30 calendar days after being notified to proceed by Contracting Officer, and complete the specific work order, and have facility ready for use in 180 calendar days.

Contractor shall submit three (3) copies of a schedule of prices: a detail breakdown of the contract price, giving the quantities for each of the various kind of work, the unit prices, and total costs thereof. Submit said schedule within fifteen (15) calendar days after contract award.

Contractor shall submit for approval a work schedule of planned performance within 15 calendar days after contract award.

1.4 Contractor Personnel Requirements:

1.4.1 Regular working hours shall consist of a period between 7 a.m. and 4 p.m., Monday through Friday, excluding Federal Government holidays. Work outside working hours will require the Contracting Officer approval. Written request shall be provided 15 calendar days prior to such work to allow Government arrangements for inspection.

A personnel list with their social security numbers shall be submitted to the Contracting Officer in order to obtain a temporary pass/access approval to Post for each employee and vehicle.

Contractors during compulsory pre-award site visit shall request to DOC all security requirements for personnel, equipment, and vehicles to obtain pass/access approval to Post.

Contractor shall verify all dimensions and existing field conditions prior to start

the work and notify the Contracting Officer of:

- a. Any conflicting detail or discrepancy within the scope of work.
- b. Any deviation from normal or assumed conditions.
- c. Any detrimental interference of inserts, conduits, openings, or any mechanical and electrical.

All details, sections, and notes shown in the attached drawings of existing buildings conditions are intended to be typical and shall be applied to similar situations elsewhere unless otherwise noted.

Contractor shall submit a weekly report with the following but not limited information:

- a. Work performed every day
- b. Weather conditions
- c. Personnel working every day
- d. Equipment being used

Contractor shall clean job site daily site and dispose debris outside Army property.

Contractor shall comply with Special Considerations, Safety Program, Required Insurance, and Post Regulations.

1.5 ATTACHMENTS:

1.5.1 Contractor shall comply with attached Technical Specifications.

1.5.2 Other attachments to be used by Contractor:

Project identification sign sketch

Material Approval Submittal Form (SOFB-DOC Form 3000-R-E, Feb 2002) with instructions.

Submittal Register Form (ENG FORM 4288-R, JAN 97).

Electrical Site Buildings 678/680 partial drawings' copies (4 each 11"x 17").

1.6 Contractor shall protect existing buildings, facilities, utilities, and equipment during working period and will be responsible for any damages resulting from operation and/or execution of this contract.

Contractor shall conduct his operations so as to cause the least possible

interference with the normal operations of the Center because the facilities (streets, driveways, and parking areas) will remain in operation during the entire construction period.

Contractor shall request final inspection in writing with at least fourteen (14) working days in advance for proper coordination and approval by the Contracting Officer.

STORAGE OF MATERIAL: The Contractor shall store materials only in places where directed. No fire hazardous materials or flammable liquids shall be stored or otherwise maintained within a building or structure, except as approved, and in accordance with the local fire regulations.

1.7 ACCESS TO THE INSTALLATION: Notwithstanding the provisions of the General Clauses entitled "Identification of Employees 1965 Jan", the Contractor will be required to obtain from the Contracting Officer, identification cards for his key personnel in order to have access to the job site.

1.7.1 SAFETY REQUIREMENTS: The Contractor shall comply with all safety requirements of Manual Corps of Engineers US Army EM 385-1-1, and OSHA Safety and Health Standards Digest, latest version, in all his activities and operations to perform the work.

1.7.2 EQUIPMENT STANDARDS: The Contractor shall submit proof that the equipment which he proposes to furnish under these specifications conforms to the standards of the Underwriters Laboratories. The label of Underwriters Laboratories shall be accepted as conforming to these requirements. In lieu of the label, the Contractor may submit a written certification from any nationally recognized testing agency, adequately equipped and competent to perform such services, that the (stated item) has been tested and conforms to the standards, including methods of test, of the Underwriters Laboratories.

1.8 ALL PROSPECTIVE BIDDERS: Are required to visit the site and familiarize themselves with all conditions that might affect the work or cost thereof. Site visit is compulsory.

1.9 ENVIRONMENTAL PROTECTION: In order to present and provide for abatement and control of any environmental pollution arising from the activities in the performance of this contract, the Contractor shall comply with all applicable pollution control and abatement, and all applicable provisions of the Corps of Engineers Manual, EM 385-1-1, entitled: General Safety Requirements, in effect on the date of solicitation. For the purposes of this contract, environmental pollution is defined as the presence of chemical, physical, or biological elements of agents which adversely affect human life; affect other species of importance to man; or degrade the utility of the environment for aesthetics and recreational purposes.

1.10 CLEANING UP: All clothes, cotton, wastes, sanding disks, and other cleaning

materials which might constitute a fire hazard shall be placed in a metal container or destroyed at the end of each workday. Upon completion of the work, all staging, scaffolding, containers, and debris shall be removed from the site or destroyed in a manner approved by the Contracting Officer. Adjacent areas and surfaces negatively affected during the performance of this contract shall be left clean and returned to the original condition.

1.11 SHOP DRAWINGS, MANUFACTURERS DATA AND CERTIFICATIONS

REQUIRED OF THE CONTRACTOR: As soon as practicable after award of the contract, and before procurement of fabrication; submit, except as specified otherwise, to the Contracting Officer, all the shop drawings, manufacturers data and certifications required in the technical sections of this specification.

1.12 SALVAGE: The Contractor shall dispose off the installation all existing materials and equipment which are required to be removed or disconnected to perform the work, but are not indicated or specified for use in the new work or salvaged, and that have been properly identified and authorized for disposal by the Contracting Officer.

1.13 SAFETY PROGRAM: The Contractor shall submit for approval a plan detailing the Safety Program in accordance with the safety requirements. Prior to starting the work, the Contractor shall meet in conference with representatives of the Directorate of Public Works (DPW) to discuss and develop mutual understanding relative to the administration of the Safety Program.

1.14 ACCIDENT REPORT: The Contractor and his sub-contractors shall maintain an accurate record, and shall report to the Contracting Officer, exposure data and all accidents resulting in death, traumatic injury, occupational disease, or damage to property, material, supplies, and equipment incidental to work performed under the contract.

1.15 PROTECTION OF PREMISES: The Contractor shall take all necessary precautions to protect the Government and private property from damage as a result of his operations. Existing property so damaged shall be promptly restored, repaired or replaced to its original condition by the Contractor at his own expense.

ACCESS ROADS: The Contractor shall at all times refrain from the use of any roads, grounds, or other facilities which have not been specifically authorized for his use.

1.6 STORM PROTECTION: Should warnings of wind of gale force or stronger be issued, the Contractor shall take every practicable precaution to minimize dangers to persons, to the work, and to adjacent property. These precautions shall include removing all loose materials, tools, and/or equipment from exposed locations, and removing or securing other temporary work.

***** END OF SECTION *****

SECTION 01330

SUBMITTAL PROCEDURES

PART 1 GENERAL

1.1 SUMMARY

1.1.1 Government-Furnished Information

Submittal register database will have the fields indicated in the ENG Form 4288-R completed, to the extent that will be required by the Government during subsequent usage.

1.2 DEFINITIONS

1.2.1 Submittal

Shop drawings, product data, samples, and administrative submittals presented for review and approval. Contract Clauses "FAR 52.236-5, Material and Workmanship," paragraph (b) and "FAR 52.236-21, Specifications and Drawings for Construction," paragraphs (d), (e), and (f) apply to all "submittals."

1.2.2 Types of Submittals

All submittals are classified as indicated in paragraph "Submittal Descriptions (SD)". Submittals also are grouped as follows:

- a. Product data: Preprinted material such as illustrations, standard schedules, performance charts, instructions, brochures, diagrams, manufacturer's descriptive literature, catalog data, and other data to illustrate portion of work, but not prepared exclusively for this contract.
- b. Samples: Physical examples of products, materials, equipment, assemblies, or workmanship that are physically identical to portion of work, illustrating portion of work or establishing standards for evaluating appearance of finished work or both.
- c. Administrative submittals: Data presented for reviews and approval to ensure that administrative requirements of project are adequately met but not to ensure directly that work is in accordance with design concept and in compliance with contract documents.

1.3 SUBMITTAL IDENTIFICATION (SD)

1.3.1 Submittals required are identified by SD numbers and titles as follows:

SD-01 Preconstruction Submittals

Certificates of insurance.

Payment and performance bonds.
List of proposed subcontractors.
List of proposed products.
Construction Progress Schedule.
Submittal register schedule.
Schedule of prices.
Health and safety plan.
Work schedule plan.
Quality control plan.
Environmental protection plan.

SD-02 Manufacturer's Product Data

Catalog cuts, illustrations, schedules, diagrams, performance charts, instructions and brochures illustrating size, physical appearance and other characteristics of materials or equipment for some portion of the work. Samples of warranty language when the contract requires extended product warranties.

SD-03 Manufacturer's Standard Color Charts

Preprinted illustrations displaying choices of color and finish for material of product. A type of product data.

SD-04 Drawings

Submittals, which graphically show relationship of various components of the work, schematic diagrams of systems, detail of fabrications, layout of particular elements, connections, and other relational aspects of work. A type of shop drawings.

SD-05 Manufacturer's Instructions

Preprinted material describing installation of a product, system or material, including special notices and Material Safety Data sheets concerning impedances, hazards and safety precautions. A type of product data.

SD-06 Schedules

Tabular list of data

SD-07 Statements

Document, required of contractor, or through contractor by way of a supplier, installer, manufacturer, or other lower tier contractor, the purpose of which is to further the quality or orderly progression of a portion of work by documenting procedures, acceptability of methods or personnel, qualifications, or other verification of quality. A type of

shop drawing.

SD-8 Test Reports

Report signed by authorized official of testing laboratory that a material, product or system identical to the material, product or system to be provided has been tested in accord with specified requirements. (Testing must have been within three years of date of contract award for the project.)

SD-09 Manufacturer's Field Reports

Documentation of the testing and verification actions taken by Manufacturer's representative to confirm compliance with manufacturers standards or instructions.

SD-10 Certificates

Statements signed by responsible officials of manufacturer of product, system or material attesting that product, system or material meets specification requirements. Must be dated after award of project contract and clearly name the project.
Document required of Contractor, or of a supplier, installer or subcontractor through Contractor, the purpose of which is to further quality of orderly progression of a portion of the work by documenting procedures, acceptability of methods or personnel qualifications.

SD-11 Operation and Maintenance Manuals

Data intended to be incorporated in operations and maintenance. A type of administrative submittal.

SD-12 Closeout Submittals

Documentation to record compliance with technical or administrative requirements or to establish an administrative mechanism.
Special warranties.

1.3.2 Approving Authority

Person authorized to approve submittal.

1.4 SUBMITTALS

Submit the following in accordance with the requirements of this section.

SD-01 Preconstruction Submittals

Submittal register; G

1.5 USE OF SUBMITTAL REGISTER

Prepare and maintain submittal register, as the work progresses. Do not change data which is output in columns (c), (d), (e), and (f) as delivered

by government; retain data which is output in columns (a), (g), (h), and (i) as approved.

1.5.1 Submittal Register

Submit submittal register with quality control plan and project schedule required by Section 01450A, "Quality Control". Do not change data in columns (c), (d), (e), and (f) as delivered by the government. Verify that all submittals required for project are listed and add missing submittals. Complete the following on the register database:

Column (a) Activity Number: Activity number from the project schedule.

Column (g) Contractor Submit Date: Scheduled date for approving authority to receive submittals.

Column (h) Contractor Approval Date: Date contractor needs approval of submittal.

Column (i) Contractor Material: Date that contractor needs material delivered to contractor control.

1.5.2 Contractor Use of Submittal Register

Update the following fields in the government-furnished submittal register program or equivalent fields in program utilized by contractor.

Column (b) Transmittal Number: Contractor assigned list of consecutive numbers.

Column (j) Action Code (k): Date of action used to record contractor's review when forwarding submittals to QC.

Column (l) List date of submittal transmission.

Column (q) List date approval received.

1.5.3 Approving Authority Use of Submittal Register

Update the following fields in the government-furnished submittal register program or equivalent fields in program utilized by contractor.

Column (b).

Column (l) List date of submittal receipt.

Column (m) through (p).

Column (q) List date returned to contractor.

1.5.4 Contractor Action Code and Action Code

Entries used will be as follows (others may be prescribed by Transmittal Form):

NR - Not Received

AN - Approved as noted

A - Approved

RR - Disapproved, Revise, and Resubmit

1.5.5 Copies Delivered to the Government

Deliver one copy of submitted register updated by contractor to government with each invoice request.

1.6 PROCEDURES FOR SUBMITTALS

1.6.1 Reviewing, Certifying, Approving Authority

QC is responsible for the timing and accuracy and of all submittals specified filed. At each "Submittal" paragraph in individual specification sections, a notation "G," following a submittal item, indicates Contracting Officer is approving authority for that submittal item.

1.6.2 Constraints

- a. Submittals listed or specified in this contract shall conform to provisions of this section, unless explicitly stated otherwise.
- b. Submittals shall be complete for each definable feature of work; components of definable feature interrelated as a system shall be submitted at same time.
- c. When acceptability of a submittal is dependent on conditions, items, or materials included in separate subsequent submittals, submittal will be returned without review.
- d. Approval of a separate material, product, or component does not imply approval of assembly in which item functions.

1.6.3 Scheduling

- a. Coordinate scheduling, sequencing, preparing and processing of submittals with performance of work so that work will not be delayed by submittal processing. Allow for potential requirements to resubmit.
- b. Except as specified otherwise, allow review period, beginning with receipt by approving authority, that includes at least 10 working days for submittals for QC manager approval and 10 working days for submittals for Contracting Officer approval. Period of review for submittals with Contracting Officer approval begins when Government receives submittal from QC organization. Period of review for each resubmitted is the same as for initial submittal.

- c. For submittals requiring review by Preventive Medicine Department, and the Command Safety Office allow review period, beginning when government receives submittal from QC organization, of 10 working days for return of submittal to the contractor. Period of review for each resubmitted is the same as for initial submittal.

1.6.4 Variations

Variations from contract requirements require Government approval pursuant to contract Clause entitled "FAR 52.236-21, Specifications and Drawings for Construction" and will be considered where advantageous to government.

1.6.4.1 Considering Variations

Discussion with contracting officer prior to submission, will help ensure functional and quality requirements are met and minimize rejections and resubmittals. When contemplating a variation, which results in lower cost, consider submission of the variation as a Value Engineering Change Proposal (VECP).

1.6.4.2 Proposing Variations

When proposing variation, deliver written request to the contracting officer, with documentation of the nature and features of the variation and why the variation is desirable and beneficial to government. If lower cost is a benefit, also include an estimate of the cost saving. In addition to documentation required for variation, include the submittals required for the item. Clearly mark the proposed variation in all documentation.

1.6.4.3 Warranting That Variations Are Compatible

When delivering a variation for approval, contractor warrants that this contract has been reviewed to establish that the variation, if incorporated, will be compatible with other elements of work.

1.6.4.4 Review Schedule Is Modified

In addition to normal submittal review period, the Government of submittals with variations will allow a period of 10 working days for consideration.

1.6.5 Contractor's Responsibilities

- a. Determine and verify field measurements, materials, field construction criteria; review each submittal; and check and coordinate each submittal with requirements of the work and contract documents.
- b. Transmit submittals to QC organization in accordance with schedule on approved Submittal Register, and to prevent delays in the work, delays to government, or delays to separate contractors.
- c. Advise contracting officer of variation, as required by paragraph entitled "Variations."

- d. Correct and resubmit submittal as directed by approving authority. When resubmitting disapproved transmittals or transmittals noted for resubmitted, the contractor shall provide copy of that previously submitted transmittal including all reviewer comments for use by approving authority. Direct specific attention in writing or on resubmitted submittal, to revisions not requested by approving authority on previous submissions.
- e. Furnish additional copies of submittal when requested by contracting officer, to a limit of 5 copies per submittal.
- f. Complete work, which must be accomplished as basis of a submittal in time to allow submittal to occur as scheduled.
- g. Ensure no work has begun until submittals for that work have been returned as "approved," or "approved as noted", except to the extent that a portion of work must be accomplished as basis of submittal.

1.6.6 QC Organization Responsibilities

- a. Note date on which submittal was received from contractor on each submittal.
- b. Review each submittal; and check and coordinate each submittal with requirements of work and contract documents.
- c. Review submittals for conformance with project design concepts and compliance with contract documents.
- d. Act on submittals, determining appropriate action based on QC organization's review of submittal.
 - (1) When QC manager is approving authority, take appropriate action on submittal from the possible actions defined in paragraph entitled, "Actions Possible."
 - (2) When contracting officer is approving authority or when variation has been proposed, forward submittal to Government with certifying statement or return submittal marked "not reviewed" or "revise and resubmit" as appropriate. The QC organization's review of submittal determines appropriate action.
- e. Ensure that material is clearly legible.
- f. Stamp each sheet of each submittal with QC certifying statement or approving statement, except that data submitted in bound volume or on one sheet printed on two sides may be stamped on the front of the first sheet only.
 - (1) When approving authority is contracting officer, QC organization will certify submittals forwarded to contracting officer with the following certifying statement:

"I hereby certify that the material shown and marked in this submittal is that proposed to be incorporated with Project Number B9-L-2090-C-02, is in compliance with the contract drawings and specification, can be installed in the allocated spaces, and is submitted for Government approval.

Certified by Submittal Reviewer _____, Date _____
(Signature when applicable)

Certified by QC manager _____, Date _____"
(Signature)

- g. Sign certifying statement or approval statement. The person signing certifying statements shall be QC organization member designated in the approved QC plan. The signatures shall be in original ink. Stamped signatures are not acceptable.
- h. Update submittal register as submittal actions occur and maintain the submittal register at project site until final acceptance of all work by contracting officer.
- i. Retain a copy of approved submittals at project site, including contractor's copy of approved samples.

1.6.7 Government's Responsibilities

When approving authority is contracting Officer, the Government will:

- a. Note date on which submittal was received from QC manager, on each submittal for which the contracting officer is approving authority.
- b. Review submittals for approval within scheduling period specified and only for conformance with project design concepts and compliance with contract documents.
- c. Identify returned submittals with one of the actions defined in paragraph entitled "Actions Possible" and with markings appropriate for action indicated.

1.6.8 Actions Possible

Submittals will be returned with one of the following notations:

- a. Submittals marked "not reviewed" will indicate submittal has been previously reviewed and approved, is not required, does not have evidence of being reviewed and approved by contractor, or is not complete. A submittal marked "not reviewed" will be returned with an explanation of the reason it is not reviewed. Resubmit submittals returned for lack of review by contractor or for being incomplete, with appropriate action, coordination, or change.

- b. Submittals marked "approved" "approved as submitted" authorize contractor to proceed with work covered.
- c. Submittals marked "approved as noted" or "approval except as noted; resubmission not required" authorize contractor to proceed with work as noted provided contractor takes no exception to the notations.
- d. Submittals marked "revise and resubmit" or "disapproved" indicate submittal is incomplete or does not comply with design concept or requirements of the contract documents and shall be resubmitted with appropriate changes. No work shall proceed for this item until resubmitted is approved.

1.7 FORMAT OF SUBMITTALS

1.7.1 Transmittal Form

Transmit each submittal, except sample installations and sample panels, to office of approving authority. Transmit submittals with transmittal form prescribed by Contracting Officer and standard for project. The transmittal form shall identify contractor, indicate date of submittal, and include information prescribed by transmittal form and required in paragraph entitled "Identifying Submittals." Process transmittal forms to record actions regarding sample panels and sample installations.

1.7.2 Identifying Submittals

Identify submittals, except sample panel and sample installation, with the following information permanently adhered to or noted on each separate

component of each submittal and noted on transmittal form. Mark each copy of each submittal identically, with the following:

- a. Project title and location.
- b. Construction contract number.
- c. Section number of the specification section by which submittal is required.
- d. Submittal description (SD) number of each component of submittal.
- e. When a resubmission, add alphabetic suffix on submittal description, for example, SD-10A, to indicate resubmission.
- f. Name, address, and telephone number of subcontractor, supplier, manufacturer and any other second tier contractor associated with submittal.
- g. Product identification and location in project.

1.7.3 Format for Product Data

- a. Present product data submittals for each section as a complete, bound volume. Include table of contents, listing page and catalog item numbers for product data.
- b. Indicate, by prominent notation, each product which is being submitted; indicate specification section number and paragraph number to which it pertains.
- c. Supplement product data with material prepared for project to satisfy submittal requirements for which product data does not exist. Identify this material as developed specifically for project.

1.7.4 Format of Samples

- a. Provide one field sample in size 12 by 12 inches minimum, at a location indicated by the Contracting Officer.
- b. Provide samples in size 6 by 6 inches minimum, in a $\frac{3}{4}$ -inch thick plywood for the Contracting Officer approval.
- c. Recording of Sample Installation: Note and preserve the notation of area constituting sample installation but remove notation at final clean up of project.

1.7.5 Format of Administrative Submittals

- a. When submittal includes a document, which is to be used in project or become part of project record, other than as a submittal, do not apply contractor's approval stamp to document, but to a separate sheet-accompanying document.

1.8 QUANTITY OF SUBMITTALS

1.8.1 Number of Copies of Product Data

- a. Submit four copies of submittals of product data requiring review and approval by Contracting Officer.

1.8.2 Number of Samples

- a. Submit three samples. Approving authority will retain one approved sample, one will be forwarded to the Swimming Pool Facility Manager, and one will be returned to contractor.
- b. Submit one sample installation (field sample), where directed.

1.8.3 Number of Copies of Administrative Submittals

- a. Unless otherwise specified, submit administrative submittals compliance with quantity requirements specified for product data.

1.9 FORWARDING SUBMITTALS

1.9.1 Samples Required of the Contractor

Submit samples to:

Department of the Army
Directorate of Contracting (DOC)
P.O. Box 34000
Building 566, Fort Buchanan, P.R. 00934-3400
Attention: Contracting Officer

1.10 SUBMITTAL CLASSIFICATION

Submittals are classified as follows:

1.10.1 Government Approved

Government approval is required for extensions of design, critical materials, deviations, equipment whose compatibility with the entire system must be checked, and other items as designated by the Contracting Officer. Within the terms of the Contract Clause entitled "Specifications and Drawings for Construction," they are considered to be "shop drawings."

1.10.2 Information Only

All submittals not requiring Government approval will be for information only. They are not considered to be "shop drawings" within the terms of the Contract Clause referred to above.

1.11 APPROVED SUBMITTALS

The Contracting Officer's approval of submittals shall not be construed as a complete check, but will indicate only that the general method of construction, materials, detailing and other information are satisfactory.

Approval will not relieve the Contractor of the responsibility for any error, which may exist, as the Contractor under the Contractor Quality Control (CQC) requirements of this contract is responsible for dimensions, the design of adequate connections and details, and the satisfactory construction of all work. After submittals have been approved by the Contracting Officer, no resubmitted for the purpose of substituting materials or equipment will be considered unless accompanied by an explanation of why a substitution is necessary.

1.12 DISAPPROVED SUBMITTALS

The Contractor shall make all corrections required by the Contracting Officer and promptly furnish a corrected submittal in the form and number of copies specified for the initial submittal. If the Contractor considers any correction indicated on the submittals to constitute a change to the contract, a notice in accordance with the Contract Clause "Changes" shall be given promptly to the Contracting Officer.

1.13 WITHHOLDING OF PAYMENT

Payment for materials incorporated in the work will not be made if required approvals have not been obtained.

1.14 GENERAL

The Contractor shall make submittals as required by the specifications. The Contracting Officer may request submittals in addition to those specified when deemed necessary to adequately describe the work covered in the respective sections. Units of weights and measures used on all submittals shall be the same as those used in the contract drawings. Each submittal shall be complete and in sufficient detail to allow ready determination of compliance with contract requirements. Prior to submittal, all items shall be checked and approved by the Contractor's Quality Control (CQC) System Manager and each item shall be stamped, signed, and dated by the CQC System Manager indicating action taken. Proposed deviations from the contract requirements shall be clearly identified. Submittals shall include items such as: descriptive literature including (but not limited to) catalog cuts; samples; certifications; warranties; and other such required submittals. Submittals requiring Government approval shall be scheduled and made prior to the acquisition of the material covered thereby. Samples remaining upon completion of the work shall be picked up and disposed of in accordance with manufacturer's Material Safety Data Sheets (MSDS) and in compliance with existing laws and regulations.

1.15 SUBMITTAL REGISTER

At the end of this section is a submittal register showing items of equipment and materials for which submittals are required by the specifications; this list may not be all inclusive and additional submittals may be required. The contractor shall submit the submittal register within 15 days after the notice of award. The contractor shall maintain a submittal register for the project in accordance with Section 01312A QUALITY CONTROL SYSTEM (QCS).

1.16 SCHEDULING

Submittals covering component items forming a system or items that are interrelated shall be scheduled to be coordinated and submitted concurrently. Certifications to be submitted with the pertinent drawings shall be so scheduled. Adequate time of minimum ten (10) calendar days shall be allowed and shown on the register for review and approval. No delay damages or time extensions will be allowed for time lost in late submittals.

1.17 TRANSMITTAL FORM (ENG FORM 4025)

The sample transmittal form (ENG Form 4025) attached to this section shall be used for submitting both Government approved and information only submittals in accordance with the instructions on the reverse side of the form. These forms will be furnished to the Contractor. Filling out all the heading blank spaces and identifying each item submitted shall properly

complete this form. Special care shall be exercised to ensure proper listing of the specification paragraph and/or sheet number of the contract drawings pertinent to the data submitted for each item.

1.18 SUBMITTAL PROCEDURES

Submittals shall be made as follows:

1.18.1 Procedures

Forward four copies of each submittal by mail or hand carried to:

Department of the Army
Directorate of Contracting (DOC)
P.O. Box 34000
Building 566, Fort Buchanan, P.R. 00934-3400
Attention: Contracting Officer

1.18.2 Deviations

For submittals, which include proposed deviations requested by the Contractor, the column "variation" of ENG Form 4025 shall be checked. The Contractor shall set forth in writing the reason for any deviations and annotate such deviations on the submittal. The Government reserves the right to rescind inadvertent approval of submittals containing unnoted deviations.

1.19 CONTROL OF SUBMITTALS

The Contractor shall carefully control his procurement operations to ensure that each individual submittal is made on or before the Contractor scheduled submittal date shown on the approved "Submittal Register."

1.20 GOVERNMENT APPROVED SUBMITTALS

Upon completion of review of submittals requiring Government approval, the submittals will be identified as having received approval by being so

stamped and dated. The Contracting Officer will retain Three (3) copies of the submittal and two (2) copies of the submittal will be returned to the Contractor.

1.21 INFORMATION ONLY SUBMITTALS

Normally submittals for information only will not be returned. Approval of the Contracting Officer is not required on information only submittals. The Government reserves the right to require the Contractor to resubmit any item found not to comply with the contract. This does not relieve the Contractor from the obligation to furnish material conforming to the plans and specifications; will not prevent the Contracting Officer from requiring removal and replacement of nonconforming material incorporated in the work; and does not relieve the Contractor of the requirement to furnish samples for testing by the Government laboratory or for check testing by the

Government in those instances where the technical specifications so prescribe.

1.22 STAMPS

Stamps used by the Contractor on the submittal data to certify that the submittal meets contract requirements shall be similar to the following:

| |
|---|
| CONTRACTOR |
| (Firm Name) |
| _____ Approved |
| _____ Approved with corrections as noted on submittal data and/or attached sheets(s). |
| SIGNATURE: _____ |
| TITLE: _____ |
| DATE: _____ |

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

*** END OF SECTION ***

SECTION 03410N
PLANT-PRECAST STRUCTURAL CONCRETE

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

ACI INTERNATIONAL (ACI)

| | |
|--------------|--|
| ACI 304R | (1989) Measuring, Mixing, Transporting, and Placing Concrete |
| ACI 305R | (1991) Hot Weather Concreting |
| ACI 309R | (1996) Consolidation of Concrete |
| ACI 318/318M | (1995) Building Code Requirements for Structural Concrete |

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

| | |
|-----------------|--|
| ASTM A 27/A 27M | (1995) Steel Castings, Carbon, for General Application |
| ASTM A 36/A 36M | (1996) Carbon Structural Steel |
| ASTM A 47 | (1990) Ferritic Malleable Iron Castings |
| ASTM A 185 | (1997) Steel Welded Wire Fabric, Plain, for Concrete Reinforcement |
| ASTM A 307 | (1994) Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength |
| ASTM A 325 | (1997) Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength |
| ASTM A 497 | (1997) Steel Welded Wire Fabric, Deformed, for Concrete Reinforcement |
| ASTM A 563 | (1996) Carbon and Alloy Steel Nuts |

| | |
|-------------------|---|
| ASTM A 706/A 706M | (1996; Rev. B) Low-Alloy Steel Deformed and Plain Bars for Concrete Reinforcement |
| ASTM C 33 | (1997) Concrete Aggregates |
| ASTM C 94 | (1997) Ready-Mixed Concrete |
| ASTM C 150 | (1997) Portland Cement |
| ASTM C 260 | (1995) Air-Entraining Admixtures for Concrete |
| ASTM C 494 | (1992) Chemical Admixtures for Concrete |
| ASTM C 595M | (1997) Blended Hydraulic Cements (Metric) |
| ASTM C 595 | (1994; Rev. A) Blended Hydraulic Cements |
| ASTM C 618 | (1997) Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Concrete |
| ASTM C 989 | (1997) Ground Granulated Blast-Furnace Slag for Use in Concrete and Mortars |
| ASTM C 1107 | (1997) Packaged Dry, Hydraulic-Cement Grout (Nonshrink) |
| ASTM F 436M | (1993) Hardened Steel Washers (Metric) |
| ASTM F 436 | (1993) Hardened Steel Washers |

AMERICAN WELDING SOCIETY (AWS)

| | |
|----------|--|
| AWS D1.4 | (1998) Structural Welding Code - Reinforcing Steel |
|----------|--|

PRECAST/PRESTRESSED CONCRETE INSTITUTE (PCI)

| | |
|-------------|---|
| PCI MNL-116 | (1985) Quality Control for Plants and Production of Precast Prestressed Concrete Products |
| PCI MNL-120 | (1992) Design Handbook - Precast and Prestressed Concrete |

1.2 PRECAST MEMBERS

The work includes the provision of precast non-prestressed concrete herein referred to as precast members. Precast members shall be the product of a manufacturer specializing in the production of precast concrete members. In the ACI publications, the advisory provisions shall be considered to be mandatory, as though the word "shall" has been substituted for "should" wherever it appears; reference to the "Building Official," the "Structural Engineer" and the "Architect/Engineer" shall be interpreted to mean the Contracting Officer.

1.3 SUBMITTALS

Submit the following in accordance with Section 01330, "Submittal Procedures."

SD-02 Shop Drawings

Drawings of precast members; G

SD-03 Product Data

Anchorage and lifting inserts and devices; G

SD-05 Design Data

Concrete mix design; G

SD-06 Test Reports

Contractor-furnished mix design

Submit copies of test reports showing that the mix has been successfully tested to produce concrete with the properties specified and will be suitable for the job conditions. Obtain approval before concrete placement.

SD-07 Certificates

Fabrication

Submit quality control procedures established in accordance with PCI MNL-116 by the precast manufacturer.

1.4 QUALITY CONTROL

1.4.1 Precast Concrete Member Design

ACI 318/318M and the PCI MNL-120. Design precast members (including connections) for the design load conditions and spans indicated, and for additional loads imposed by openings and supports of the work of other trades. Design precast members for handling without cracking in accordance with the PCI MNL-120.

1.5 DELIVERY AND STORAGE

Lift and support precast members at the lifting and supporting points indicated on the shop drawings. Store precast members off the ground. Separate stacked precast members by battens across the full width of each bearing point. Protect from damage, and overload.

1.6 FACTORY INSPECTION

At the option of the Contracting Officer, precast units may be inspected by the Contracting Officer prior to being transported to the job site. The Contractor shall give notice 14 days prior to the time the units will be available for plant inspection. Neither the exercise nor waiver of inspection at the plant will affect the Government's right to enforce contractual provisions after units are transported or erected.

QUALITY ASSURANCE

1.7.1 Drawing Information

Submit drawings indicating complete information for the fabrication, handling, and erection of the precast member. Drawings shall not be reproductions of contract drawings. Drawings of precast members (including connections) shall be prepared and sealed by a registered professional engineer, and submitted for approval prior to fabrication. The drawings shall indicate, as a minimum, the following information:

- a. Marking of members for erection
- b. Connections for work of other trades
- c. Connections between members, and connections between members and other construction
- d. Location and size of openings
- e. Headers for openings

- f. Joints between members, and joints between members and other construction
- g. Reinforcing details
- h. Material properties of steel and concrete used
- i. Lifting and erection inserts
- j. Dimensions and surface finishes of each member
- k. Erection sequence and handling requirements
- l. All loads used in design (such as live, dead, handling, and erection)
- m. Bracing/shoring required
- n. Areas to receive toppings, topping thickness.

1.7.2 Concrete Mix Design

Thirty days minimum prior to concrete placement, submit a mix design for each strength and type of concrete. Include a complete list of materials including type; brand; source and amount of cement, pozzolan, and admixtures; and applicable reference specifications.

1.7.3 Certificates: Record Requirement

ASTM C 94. Submit mandatory batch ticket information for each load of ready-mixed concrete.

PART 2 PRODUCTS

2.1 CONTRACTOR-FURNISHED MIX DESIGN

ACI 318/318M. The minimum compressive strength of concrete at 28 days shall be 4000 psi, unless otherwise indicated.

2.2 MATERIALS

2.2.1 Cement

ASTM C 150, Type I, II, or III blended cement, except as modified herein. The blended cement shall consist of a mixture of ASTM C 150 cement and one of the following materials: ASTM C 618 pozzolan or fly ash, or ASTM C 989 ground iron blast furnace slag. The pozzolan/fly ash content shall not exceed 25 percent by weight of the total cementitious material. For exposed concrete, use one manufacturer for each type of cement, ground slag, fly ash, and pozzolan.

2.2.1.1 Fly Ash and Pozzolan

ASTM C 618, Type N, F, or C, except that the maximum allowable loss on ignition shall be 6 percent for Type N and F.

2.2.1.2 Ground Iron Blast-Furnace Slag

ASTM C 989, Grade 100 or 120.

2.2.2 Water

Water shall be fresh, clean, and potable.

2.2.3 Aggregates

2.2.3.1 Aggregates Selection

ASTM C 33, Size 6, except as modified herein. Obtain aggregates for exposed concrete surfaces from one source. Aggregates shall not contain any substance which may be deleteriously reactive with the alkalies in the cement.

2.2.4 Grout

2.2.4.1 Nonshrink Grout

ASTM C 1107.

2.2.5 Admixtures

2.2.5.1 Air-Entraining

ASTM C 260.

2.2.5.2 Retarding

ASTM C 494, Type B.

2.2.5.3 Water Reducing

ASTM C 494, Type A or F.

2.2.6 Reinforcement

2.2.6.1 Reinforcing Bars

ASTM A 706/A 706M, Grade 60.

2.2.7 Metal Accessories

Provide ASTM A 123/A 123M or ASTM A 153/A 153M galvanized.

2.2.7.1 Inserts

ASTM A 47, Grade 32510 or 35018, or ASTM A 27/A 27M Grade U-60-30.

2.2.7.2 Structural Steel

ASTM A 36/A 36M.

2.2.7.3 Bolts

ASTM A 307; ASTM A 325.

2.2.7.4 Nuts

ASTM A 563.

2.2.7.5 Washers

ASTM F 844 washers for ASTM A 307 bolts, and ASTM F 436 washers for ASTM A 325 bolts.

2.3 FABRICATION

PCI MNL-116 unless specified otherwise.

2.3.1 Forms

Brace forms to prevent deformation. Forms shall produce a smooth, dense surface. Chamfer exposed edges of columns and beams 3/4 inch, unless otherwise indicated. Provide threaded or snap-off type form ties.

2.3.2 Reinforcement Placement

ACI 318/318M for placement and splicing. Reinforcement may be preassembled before placement in forms. Provide exposed connecting bars, or other approved connection methods, between precast and cast-in-place construction. Remove any excess mortar that adheres to the exposed connections.

2.3.3 Concrete

2.3.3.1 Concrete Mixing

ASTM C 94. Mixing operations shall produce batch-to-batch uniformity of strength, consistency, and appearance.

2.3.3.2 Concrete Placing

ACI 304R, ACI 305R for hot weather concreting, and ACI 309R, unless otherwise specified.

2.3.3.3 Concrete Curing

Commence curing immediately following the initial set and completion of surface finishing. Provide curing procedures to keep the temperature of the

concrete between 50 and 190 degrees F. When accelerated curing is used, apply heat at controlled rate and uniformly along the casting beds. Monitor temperatures at various points in a product line in different casts.

2.3.4 Surface Finish

Repairs located in a bearing area shall be approved by the Contracting Officer prior to repairs. Precast members containing hairline cracks which are visible and are less than 0.02 inches in width, may be accepted. Precast members which contain cracks greater than 0.02 inches in width shall be approved by the Contracting Officer, prior to being repaired. Any precast member that is structurally impaired or contains honeycombed section deep enough to expose reinforcing shall be rejected.

2.3.4.1 Unformed Surfaces

Provide a floated finish.

2.3.4.2 Formed Surfaces

PCI MNL-116 (Appendix A - Commentary), Chapter 3, for grades of surface finishes.

- a. Unexposed and exposed Surfaces: Provide a standard grade surface finish.

PART 3 EXECUTION

3.1 SURFACE REPAIR

Prior to erection, and again after installation, precast members shall be checked for damage, such as cracking, spalling, and honeycombing. As directed by the Contracting Officer, precast members that do not meet the surface finish requirements specified in Part 2 in paragraph entitled "Surface Finish" shall be repaired, or removed and replaced with new precast members.

3.2 INSTALLATION

Precast members shall be installed after the concrete has attained the specified compressive strength, unless otherwise approved by the precast manufacturer. Install in accordance with the approved shop drawings.

3.3 ANCHORAGE

Provide anchorage for fastening work in place. Conceal fasteners where practicable. Make threaded connections up tight and nick threads to prevent loosening.

3.4 WELDING

AWS D1.4 for welding connections and reinforcing splices. Protect the concrete and other reinforcing from heat during welding. Weld continuously

Install Emergency Generators at
PFC. Luis F Garcia, USARC.
Yauco, Puerto Rico

PR0171673P
October, 2006

along the entire area of contact. Grind smooth visible welds in the finished installation. Welding of epoxy-coated reinforcing is not allowed.

3.5 OPENINGS

Holes or cuts requiring reinforcing to be cut, which are not indicated on the approved shop drawing, shall only be made with the approval of the Contracting Officer and the precast manufacturer.

3.6 GROUTING

Clean and fill indicated keyways between precast members, and other indicated areas, solidly with nonshrink epoxy grout. Provide reinforcing where indicated. Remove excess grout before hardening.

3.7 CAST IN PLACE CONCRETE CATCH BASIN SECTION

Provide as indicated and as specified in Section 03307A, "Concrete for Minor Structures"

-End of Section -

SECTION 16234N

DIESEL ENGINE-GENERATOR SETS - PRIME AND STANDBY -10 TO 500 KW

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC)

AISC S335 (1989) Structural Steel Buildings Allowable Stress
Design and Plastic Design

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI B18.2.1 (1996) Square and Hex Bolts and Screws Inch
Series

ANSI C12.10 (1987) Electromechanical Watthour Meters

ANSI C37.16 (1997) Low-Voltage Power Circuit Breakers and
AC Power Circuit Protectors - Preferred Ratings,
Related Requirements, and Application
Recommendations

ANSI C37.17 (1997) Trip Devices for AC and General-Purpose
DC Low-Voltage Power Circuit Breakers

ANSI C39.1 (1981; R 1992) Electrical Analog Indicating
Instruments

ANSI S1.4 (ASA 47) (1983; R 1994) Sound Level Meters

ASME B16.9 (1993) Factory-Made Wrought Steel Buttwelding Fittings

ASME B16.39 (1986; R 1994) Malleable Iron Threaded Pipe Unions Classes 150, 250, and 300

ASME B31.9 (1996) Building Services Piping

ASME BPVC SEC VIII D1 (1995; Addenda 1995, 1996, and 1997)
Boiler and Pressure Vessel Code: Section VIII
Pressure Vessels, Division 1

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A 53 (1998) Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless

ASTM A 126 (1995) Gray Iron Castings for Valves, Flanges, and Pipe Fittings

ASTM D 975 (1997) Diesel Fuel Oils

ICBO Building Code (1994) Uniform Building Code

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)

NEMA MG 1 (1993; Rev. 1-4) Motors and Generators

NEMA PB 2 (1995) Deadfront Distribution Switchboards

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 30 (1996) Flammable and Combustible Liquids Code

NFPA 70 (2006) National Electrical Code

1.1 SYSTEM DESIGN

1.1.1 Engine-Generator Set Data

Submit the following data pertaining to each engine-generator set.

- a. Manufacturer of engine
- b. Type or model of engine

1.1.2 Submit for the following. Fractional loads shall be calculated on basis of net ratings unless otherwise called for.

- a. Fuel consumption at 0.80 power factor (Btu per net kWh)

(1) Full load.

- b. Generator efficiency at 0.80 power factor (percent)

1.2 Diesel Engine Data

Submit the following data certified by the engine manufacturer:

- a. Starting air pressure (psig)
- b. Approximate exhaust temperature degrees F at full load
- c. CFM of exhaust gas at full load
- d. CFM of intake air at full load
- e. Total heat rejected to cooling system and to ambient air at full load at maximum ambient temperature indicated in paragraph "SITE CONDITIONS" (Btu per hr)

1.4 SUBMITTALS

Submit the following in accordance with Section 01330, "Submittal Procedures."

SD-02 Shop Drawings

Engine-generator unit and auxiliary equipment

Engine-generator unit electrical drawings

SD-03 Product Data

**Load, fraction of Guarantee fuel consumption net rating of rate, Btu per
net kWh
generating unit at 0.80 power factor**

Full []

Load Btu of fuel/net kWh

Full 10 300 Btu

SD-05 Design Data

Torsional vibrations **analysis for each unit**

SD-06 Test Reports

Switchboard bus continuous current test

Piping tests

Preliminary operation

Engine performance tests

Generator tests

Engine-generator set acceptance tests

Auxiliary equipment test

SD-07 Certificates

Diesel engine generator successful operation

Field welding procedures

SD-09 Manufacturer's Field Reports

Engine-generator set tests

Submit certified factory test report within 15 calendar days after completion of tests. Provide in accordance with requirements set forth in paragraph entitled "Source Quality Control."

SD-10 Operation and Maintenance Data

Engine-generator unit and auxiliary equipment, **Data Package 4**

Engine speed governing system, **Data Package 3**

Engine-generator set voltage regulator, Data Package 5

Engine control panel, **Data Package 5**

Submit operation and maintenance data in accordance with "Operation and Maintenance Data."

SD-11 Closeout Submittals

Posted operating instructions for diesel engine-generator set

Provide text for each piece of equipment according to paragraph, "POSTED OPERATING INSTRUCTIONS."

1.5 QUALITY ASSURANCE

1.5.1 Experience Requirements

Engines installed shall meet the following operating experience requirements:

- a. Only electric generation service is considered equivalent experience. Engines driving pumps, compressors, or those in marine propulsion or railroad service are not acceptable.
- b. Only experience on the same engine model is acceptable. Engine model is considered to be a given series or class of identical bore and stroke and of the same type of engine, such as In-line or Vee. In-line and Vee engines with identical bore and stroke are considered as two separate models.
- c. Only experience at identical or higher rotative speed as that specified is acceptable.
- d. Only experience at identical or higher BMEP as that specified is acceptable.
- e. Only experience with diesel-fueled engines is acceptable.

1.5.2 Regulatory Requirements

- a. Provide devices designed and installed to comply with the following requirements:
 - (1) Power Transmission Apparatus: Guard in accordance with ASME B15.1.
 - (2) Electrical Installations: Conform to NFPA 70.
 - (3) Operator Protection: Guard in accordance with 29 CFR 1910as follows:
 - (a) Fan blades: Part 1910, Subpart O

(4) Mercury: Use of mercury in instruments, contacts, and manometers is not permitted.

b. File inspection certificates for compressed air storage system with proper authorities as may be required by law and furnish a copy to the Contracting Officer.

1.5.3 Drawing Requirements

Submit electrical drawings including elementary, schematic, wiring, and interconnection diagrams for the generator switchboard.

Submit certificates within 30 calendar days after award certifying that not less than two engines of identical number of cylinders and cylinder size, identical or higher rotative speed, up to a maximum of 1,800 rpm, and identical or higher brake mean effective pressure (BMEP), and the same basic configuration (In-line or Vee) as the engine to be provided, have each driven generators which have produced, in satisfactory operation, not less than 250 kWh of electricity for each kW of generator nameplate capability within a 2-year period. Certificates shall include:

a. A list of at least two engine-generator set installations meeting experience requirements in paragraph entitled "Experience Requirements."

b. Owner and location of each installation.

g. Design characteristics of each unit, such as bore and stroke, number of cylinders, and configuration (In-line or Vee).

1.7 POSTED OPERATING INSTRUCTIONS

Provide operating instructions laminated between matte-surface thermoplastic sheets suitable for placement adjacent to corresponding equipment. Install operating instructions where directed.

PART 2 PRODUCTS

2.1 MATERIALS

Provide materials and equipment of manufacturers regularly engaged in production of such materials or equipment, and the manufacturer's latest standard commercial product that complies with specification requirements. Where two units of the same class of equipment are required, these units shall be products of a single manufacturer; however, component parts of the system need not be products of the same manufacturer.

2.2.1 Equipment Rating and Capability

Each engine-generator set shall have a net standby 500 KVA rating capacity of not less than 400 kW at 0.8 power factor and shall be designed to supply [208Y/120-volt, 60-Hz ac output. Motor starting KVA shall be a minimum of 500, based on a sustained RMS voltage drop of no more than 5 percent of no-load voltage. Both engine and generator of the set shall be capable of satisfactorily carrying a load 10 percent in excess of net rated generating capacity at 0.8 power factor for a period of 2 continuous hours out of 24 consecutive hours. Auxiliary equipment shall be designed for continuous duty at 100 percent of rated net capacity of engine-generator set. Cooling system components and auxiliaries shall be properly sized relative to engine coolant specified under cooling system.

2.3 GENERATOR SET DESIGN AND CONSTRUCTION

2.3.1 Diesel Generator Sets

- a. Engines shall be two-cycle, naturally aspirated, turbocharged, or turbocharged and intercooled; or four-cycle, naturally aspirated, turbocharged or turbocharged and intercooled; vertical In-line or vertical Vee type; water cooled; designed for continuous electrical

duty, stationary service. Provide each engine designed and constructed to eliminate undue heating, vibration, and wear and be efficient and trouble free in operation. Engine shall be capable of operating on diesel fuel oil conforming to ASTM D 975, Grade 2-

b.

3.3.4.1 Test Reruns

When specified performance is not met by these tests, make such adjustments and changes, as necessary, and conduct additional tests, as necessary, to further check performance of equipment.

3.3.4.2 Failure to Meet Requirements

In the event equipment fails to meet specified performance or fails to operate satisfactorily, the Government shall have the right to operate equipment until defects have been corrected. If engine-generator sets fail to meet the guaranteed efficiency, the Government reserves the right to assess compensatory damages against the Contractor as determined in paragraph entitled "Compensatory Damages on Performance" or to reject engine-generator set. Equipment proved to be faulty or inadequate for service specified will be rejected, but the Government shall have the right to operate rejected equipment until such time as new equipment is provided by the Contractor to replace equipment rejected.

3.3.4.3 Manufacturer's Field Services

Furnish the services of one or more diesel-generator representative or technicians, experienced in installation and operation of the type of systems being provided, to supervise testing, adjustment of the system, and to instruct Government personnel.

- End of Section -

SECTION 16375A

ELECTRICAL DISTRIBUTION SYSTEM, UNDERGROUND

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI C119.1 (1986; R 1997) Sealed Insulated Underground
Connector Systems Rated 600 Volts

ANSI C80.1 (1995) Rigid Steel Conduit - Zinc Coated

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A 123/A 123M (2001) Zinc (Hot-Dip Galvanized) Coatings on
Iron and Steel Products

ASTM A 153/A 153M (2001) Zinc Coating (Hot-Dip) on Iron and
Steel Hardware

ASTM B 3 (1995) Soft or Annealed Copper Wire

ASTM B 496 (1999) Compact Round Concentric-Lay-Stranded
Copper Conductors

ASTM B 8 (1999) Concentric-Lay-Stranded Copper
Conductors, Hard, Medium-Hard, or Soft

ASTM D 1654 (1992) Evaluation of Painted or Coated
Specimens Subjected to Corrosive Environments

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)

IEEE C2 (2006) National Electrical Safety Code

IEEE Std 81 (1983) Guide for Measuring Earth Resistivity,
Ground Impedance, and Earth Surface

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)

NEMA TC 6 (1990) PVC and ABS Plastic Utilities Duct for
Underground Installation

NEMA WC 7 (1988; Rev 3 1996) Cross-Linked.
-Thermosetting-Polyethylene-Insulated Wire
and Cable for the Transmission and
Distribution of Electrical Energy

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70 (1999) National Electrical Code

UNDERWRITERS LABORATORIES (UL)

UL 467 (1993; Rev thru Apr 1999) Grounding and
Bonding Equipment

UL 486A (1997; Rev thru Dec 1998) Wire Connectors and
Soldering Lugs for Use with Copper Conductors

UL 6 (1997) Rigid Metal Conduit

UL 651 (1995; Rev thru Oct 1998) Schedule 40 and 80
Rigid PVC Conduit

UL 854 (1996; Rev Oct 1999) Service-Entrance Cables

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-01 Shop Drawings

Electrical Distribution System; G

Detail drawings consisting of equipment drawings, illustrations, schedules, instructions, diagrams manufacturers standard installation drawings and other information necessary to define the installation and enable the Government to check conformity with the requirements of the contract drawings.

If departures from the contract drawings are deemed necessary by the Contractor, complete details of such departures shall be included with the detail drawings. Approved departures shall be made at no additional cost to the Government.

Detail drawings shall show how components are assembled, function together and how they will be installed on the project. Data and drawings for component parts of an item or system shall be coordinated and submitted as a unit. Data and drawings shall be coordinated and included in a single submission. Multiple submissions for the same equipment or system are not acceptable except where prior approval has been obtained from the Contracting Officer. In such cases, a list of data to be submitted later shall be included with the first submission. Detail drawings shall consist of the following:

- a. Detail drawings showing physical arrangement, construction details, connections, finishes, materials used in fabrication, provisions for conduit entrance, access requirements for installation and maintenance, physical size, electrical characteristics, foundation and support details, and equipment weight. Drawings shall be drawn to scale and/or dimensioned
- b. Internal wiring diagrams of equipment showing wiring as actually provided for this project. External wiring connections shall be clearly identified.

Detail drawings shall as a minimum depict the installation of the following items:

A Generator's set

As-Built Drawings; G.

The as-built drawings shall be a record of the construction as installed. The drawings shall include the information shown on the contract drawings as well as deviations, modifications, and changes from the contract drawings, however minor. The as-built drawings shall be a full sized set of prints marked to reflect deviations, modifications, and changes. The as-built drawings shall be complete and show the location, size, dimensions, part identification, and other information. Additional sheets may be added. The as-built drawings shall be jointly inspected for accuracy and completeness by the Contractor's quality control representative and by the Contracting Officer prior to the submission of each monthly pay estimate. Upon completion of the work, the Contractor shall provide three full sized sets of the marked prints to the Contracting Officer for approval. If upon review, the as-built drawings are found to contain errors and/or omissions, they will be returned to the Contractor for correction. The Contractor shall correct and return the as-built drawings to the Contracting Officer for approval within 10 calendar days from the time the drawings are returned to the Contractor.

SD-02 Product Data

Protective Device; G

Nameplates; G

Catalog cuts, brochures, circulars, specifications, product data, and printed information in sufficient detail and scope to verify compliance with the requirements of the contract documents.

Material and Equipment; G

A complete itemized listing of equipment and materials proposed for incorporation into the work. Each entry shall include an item number, the quantity of items proposed, and the name of the manufacturer of each such item.

General Installation Requirements; G

As a minimum, installation procedures for generator and transfer switch, and cables.

SD-03Test Reports

Factory Tests; G

Certified factory test reports shall be submitted when the manufacturer performs routine factory tests, including tests required by standards listed in paragraph REFERENCES. Results of factory tests performed shall be certified by the manufacturer, or an approved testing laboratory, and submitted within 7 days following successful completion of the tests. The manufacturer's pass-fail criteria for tests specified in paragraph FIELD TESTING shall be included.

Field Testing; G

A proposed field test plan, 20 days prior to testing the installed system. No field test shall be performed until the test plan is approved. The test plan shall consist of complete field test procedures including tests to be performed, test equipment required, and tolerance limits.

Operating Tests; G

Six copies of the information described below in 8-1/2 by 11 inch binders having a minimum of three rings, including a separate section for each test. Sections shall be separated by heavy plastic dividers with tabs.

- a. A list of equipment used,
- b. A copy of measurements taken.
- c. The dates of testing.
- d. The equipment and values to be verified.
- e. The condition specified for the test.

- f. The test results, signed and dated.
- g. A description of adjustments made.

Cable Installation; G

Six copies of the information described below in 8-1/2 by 11 inch binders having a minimum of three rings from which material may readily be removed and replaced, including a separate section for each cable pull. Sections shall be separated by heavy plastic dividers with tabs.

- a. A list of equipment used, with calibration certifications.
- b. The cable manufacturer and type of cable.

SD-04 Certificates

Material and Equipment; G

Where materials or equipment are specified to conform to the standards of the Underwriters Laboratories (UL) or to be constructed or tested, or both, in accordance with the standards of the American National Standards Institute (ANSI), the Institute of Electrical and Electronics Engineers (IEEE), or the National Electrical Manufacturers Association (NEMA), the Contractor shall submit proof that the items provided conform to such requirements. The label of, or listing by, UL will be acceptable as evidence that the items conform. Either a certification or a published catalog specification data statement, to the effect that the item is in accordance with the referenced ANSI or IEEE standard, will be acceptable as evidence that the item conforms. A similar certification or published catalog specification data statement to the effect that the item is in accordance with the referenced NEMA standard, by a company listed as a member company of NEMA, will be acceptable as evidence that the item conforms. In lieu of such certification or published data, the Contractor may submit a certificate from a recognized testing agency equipped and competent to perform such services, stating that the items have been tested and that they conform to the requirements listed, including methods of testing of the specified agencies. Compliance with above-named requirements does not relieve the Contractor from compliance with any other requirements of the specifications.

Cable Installer Qualifications; G

The Contractor shall provide at least one onsite person in a supervisory position with a documentable level of competency and experience to supervise all cable pulling operations. A resume shall be provided showing the cable installers' experience in the last three years, including a list of references complete with points of contact, addresses and telephone numbers.

SD-05 Operation and Maintenance Data

Electrical Distribution System; G

Six copies of operation and maintenance manuals, within 7 calendar days following the completion of tests and including assembly, installation, operation and maintenance instructions, spare parts data which provides supplier name, current cost, catalog order number, and a recommended list of spare parts to be stocked. Manuals shall also include data outlining detailed procedures for system startup and operation, and a troubleshooting guide which lists possible operational problems and corrective action to be taken. A brief description of all equipment, basic operating features, and routine maintenance requirements shall also be included. Documents shall be bound in a binder marked or identified on the spine and front cover. A table of contents page shall be included and marked with pertinent contract information and contents of the manual. Tabs shall be provided to separate different types of documents, such as catalog ordering information, drawings, instructions, and spare parts data. Index sheets shall be provided for each section of the manual when warranted by the quantity of documents included under separate tabs or dividers.

Three additional copies of the instructions manual shall be provided within 30 calendar days following the manuals.

1.4 DELIVERY, STORAGE, AND HANDLING

Devices and equipment shall be visually inspected by the Contractor when received and prior to acceptance from conveyance. Stored items shall be protected from the environment in accordance with the manufacturer's published instructions. Damaged items shall be replaced. Oil filled transformers and switches shall be stored in accordance with the manufacturer's requirements.

PART 2 PRODUCTS

2.1 STANDARD PRODUCT

Material and equipment shall be the standard product of a manufacturer regularly engaged in the manufacture of the product and shall essentially duplicate items that have been in satisfactory use for at least 2 years prior to bid opening. Items of the same classification shall be identical including equipment, assemblies, parts, and components.

2.2 NAMEPLATES

2.2.1 General

Each major component of this specification shall have the manufacturer's name, address, type or style, model or serial number, and catalog number on a nameplate securely attached to the equipment. Nameplates shall be made of noncorrosive metal. Equipment containing liquid dielectrics shall have the type of dielectric on the nameplate .

2.3 Corrosion Protection

2.3.1 Ferrous Metal Materials

2.3.1.1 Hardware

Ferrous metal hardware shall be hot-dip galvanized in accordance with ASTM A 153/A 153M and ASTM A 123/A 123M.

2.3.2 Equipment

Equipment and component items, including but not limited to transformer stations, shall be provided with corrosion-resistant finishes which shall withstand 120 hours of exposure to the salt spray test specified in ASTM B 117 without loss of paint or release of adhesion of the paint primer coat to the metal surface in excess of 1/16 inch from the test mark. The scribed test mark and test evaluation shall be in accordance with ASTM D 1654 with a rating of not less than 7 in accordance with TABLE 1, (procedure A). Cut edges or otherwise damaged surfaces of hot-dip galvanized sheet steel or mill galvanized sheet steel shall be coated with a zinc rich paint conforming to the manufacturer's standard.

2.4 CABLES

Cables shall be stranded conductor type unless otherwise indicated. Underground cables shall be soft drawn copper complying with ASTM B 3.

2.4.1. Insulation

Cable insulation shall be cross-linked thermosetting polyethylene (XLP) insulation conforming to the requirements of NEMA WC 7

2.4.1. Neutrals

Neutral conductors shall be copper employing the same insulation and jacket materials as phase conductors, a 600-volt insulation rating is acceptable.

2.4.2 Low-Voltage Cables

Cables shall be rated 600 volts and shall conform to the requirements of NFPA 70, and must be UL listed for the application or meet the applicable section of either ICEA or NEMA standards.

2.4.2 Conductor Material

Underground cables shall be annealed copper complying with ASTM B 3 and ASTM B 8

2.5. Low-Voltage Cable Splices

Low-voltage cable splices and terminations shall be rated at not less than 600 Volts. Splices in conductors No. 10 AWG and smaller shall be made with an insulated, solderless, pressure type connector, conforming to the applicable requirements of UL 486A. Splices in conductors No. 8 AWG and larger shall be made with noninsulated, solderless, pressure type connector,

conforming to the applicable requirements of UL 486A. Splices shall then be covered with an insulation and jacket material equivalent to the conductor insulation and jacket. Splices below grade or in wet locations shall be sealed type conforming to ANSI C119.1 or shall be waterproofed by a sealant-filled, thick wall, heat shrinkable, thermosetting tubing or by pouring a thermosetting resin into a mold that surrounds the joined conductors.

2.5.1 Terminations

Terminations shall be in accordance with IEEE Std 48, Class 1 or Class 2; of Terminations shall be of the outdoor type, except that where installed inside outdoor equipment housings which are sealed against normal infiltration of moisture and outside air.

2.6 CONDUIT AND DUCTS

Ducts shall be single, round-bore type, with wall thickness and fittings suitable for the application. Duct lines shall be nonencased direct-burial, thick-wall type, for duct lines between manholes and for Low-voltage lines

2.6.1 Metallic Conduit

Rigid galvanized steel conduit shall comply with UL 6 and ANSI C80.1. Metallic conduit fittings and outlets shall comply with UL 514A and NEMA FB 1.

2.6.2 Nonmetallic Ducts

2.6.2.1 Direct Burial

UL 651 Schedule 40 Type DB.

2.6.3 Conduit Sealing Compound

Compounds for sealing ducts and conduit shall have a putty-like consistency workable with the hands at temperatures as low as 35 degrees F, shall neither slump at a temperature of 300 degrees F, nor harden materially when exposed to the air.

PART 3 EXECUTION

3.1 GENERAL INSTALLATION REQUIREMENTS

3.1. Conformance to Codes

The installation shall comply with the requirements and recommendations of NFPA 70 and IEEE C2 as applicable.

3.1.2 Verification of Dimensions

The Contractor shall become familiar with details of the work, shall verify dimensions in the field, and shall advise the Contracting Officer of any discrepancy before performing any work.

3.2. Cable Installation Plan and Procedure

Cable shall be installed strictly in accordance with the cable manufacturer's recommendations. Each circuit shall be identified by means of a fiber, laminated plastic, or non-ferrous metal tags, or approved equal, in each handhole, junction box, and each terminal. Each tag shall contain the following information; cable type, conductor size, circuit number, circuit voltage, cable destination and phase identification.

3.2.1. Cable Inspection

The cable reel shall be inspected for correct storage positions, signs of physical damage, and broken end seals. If end seal is broken, moisture shall be removed from cable in accordance with the cable manufacturer's recommendations.

3.2.1.2 Duct Cleaning

Duct shall be cleaned with an assembly that consists of a flexible mandrel (manufacturers standard product in lengths recommended for the specific size and type of duct) that is 1/4 inch less than inside diameter of duct, 2 wire brushes, and a rag. The cleaning assembly shall be pulled through conduit a minimum of 2 times or until less than a volume of 8 cubic inches of debris is expelled from the duct.

3.2.1.3 Duct Lubrication

The cable lubricant shall be compatible with the cable jacket for cable that

- a. Site layout drawing with cable pulls identified in numeric order of expected pulling sequence and direction of cable pull.
- b. List of cable installation equipment.
- c. Lubricant manufacturer's application instructions.
- d. Procedure for resealing cable ends to prevent moisture from entering cable.

3.2.2 Duct Line

Low-voltage cables shall be installed in duct lines where indicated. Cable splices in low-voltage cables shall be made in handholes only. Neutral and grounding conductors shall be installed in the same duct with their associated phase conductors.

3.2.3. Trenching

Trenches for direct-burial cables shall be excavated to 36 inches below finished grade or as required by Code, to provide the minimum necessary cable cover. Bottoms of trenches shall be smooth and free of stones and sharp objects. Where bottoms of trenches comprise materials other than sand, a 6 inch layer of river sand shall be laid first and compacted to serve as conduit bedding, backfill shall be compacted to 90% in six inch layers.

3.2.3.4 Cable Markers

Markers shall be located with a 5 mil, brightly colored plastic tape not less than 6 inches in width and suitably inscribed at not more than 10 feet on centers, or other approved dig-in warning indication, shall be placed approximately 12 inches below finished grade levels of trenches.

3.4 GROUNDING

A ground consisting of the indicated configuration of bare copper conductors and driven ground rods shall be installed around pad-mounted equipment as shown. Equipment frames of metal-enclosed equipment, and other noncurrent-carrying metal parts, such as cable shields, cable sheaths and armor, and metallic conduit shall be grounded. At least 2 connections shall be provided from generator set ground bus to the ground rods. Metallic frames and covers of boxes shall be grounded by use of a braided, copper ground strap with equivalent ampacity of No. 6 AWG.

3.4.1 Grounding Electrodes

Grounding electrodes shall be installed as shown on the drawings and as follows:

- a. Driven rod electrodes - Unless otherwise indicated, ground rods shall be driven into the earth until the tops of the rods are approximately 1 foot below finished grade.

3.4.2 Grounding and Bonding Connections

Connections above grade shall be made by the fusion-welding process or with bolted solderless connectors, in compliance with UL 467, and those below grade shall be made by a fusion-welding process. Where grounding conductors are connected to aluminum-composition conductors, specially treated or lined copper-to-aluminum connectors suitable for this purpose shall be used.

3.4.3 Grounding and Bonding Conductors

Grounding and bonding conductors include conductors used to bond transformer enclosures and equipment frames to the grounding electrode system. Grounding and bonding conductors shall be sized as shown, and located to provide maximum physical protection

- a. Single rod electrode - 25 ohms.

3.5 Operating Tests

After the installation is completed, and at such times as the Contracting Officer may direct, the Contractor shall conduct operating tests for approval. The equipment shall be demonstrated to operate in accordance with the requirements herein. An operating test report shall be submitted in accordance with paragraph SUBMITTALS.

Install Emergency Generator at USARC
PFC Luis F Garcia
Yauco, Puerto Rico

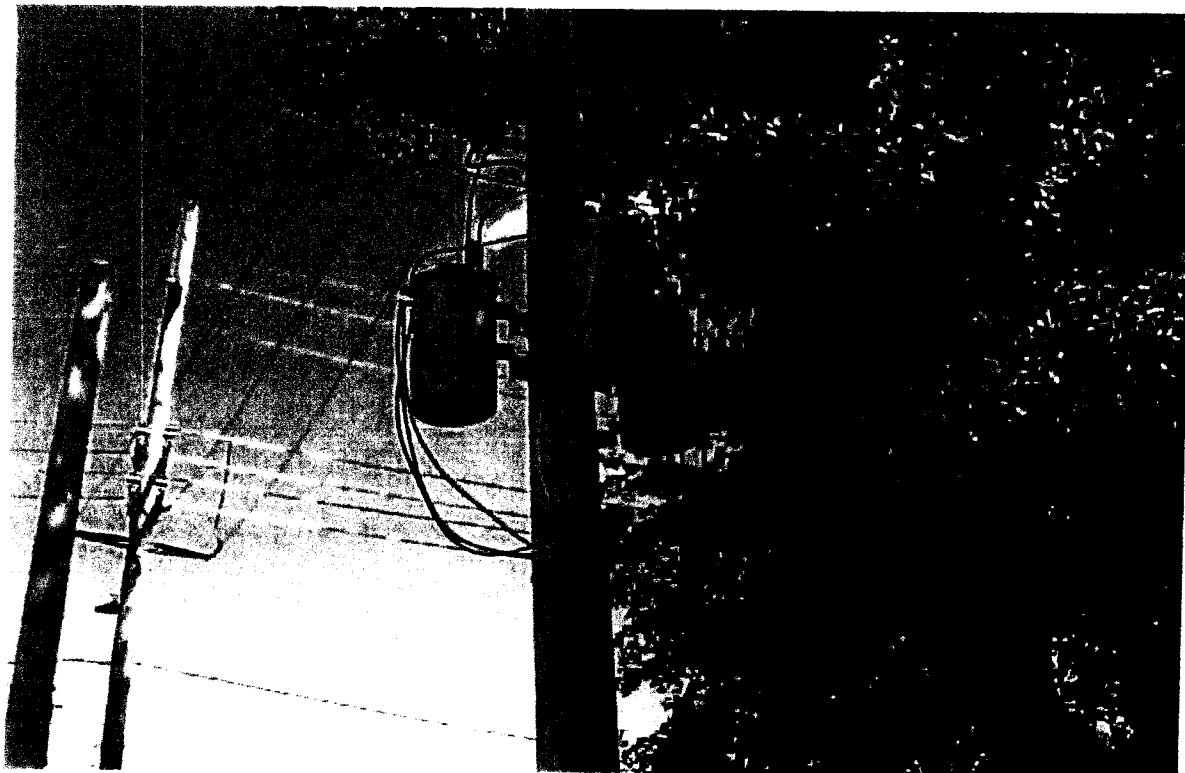
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3.6 ACCEPTANCE

Final acceptance of the facility will not be given until the Contractor has successfully completed all tests and after all defects in installation, material or operation have been corrected.

*** END OF SECTION ***

YALCO HARC- TRIMMING OF TREE & EQUIRE - 8/15/05



YALCO HARC- MAIN BLDG. - TOUGH WORK

8/15/05

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SECTION 01525N

SAFETY REQUIREMENTS

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

ASME INTERNATIONAL (ASME)

ASME B30.5 (1994) Mobile Cranes

ASME B30.22 (1993) Articulating Boom Cranes

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

29 CFR 1910.120 Hazardous Waste Operations and Emergency Response

29 CFR 1926.65 Hazardous Waste Operations and Emergency Response

29 CFR 1926.502(f) Warning Line Systems

U.S. ARMY CORPS OF ENGINEERS (USACE)

COE EM-385-1-1 (1996) Safety and Health Requirements Manual

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70 (2006) National Electrical Code

NFPA 241 (1996) Safeguarding Construction, Alteration, and Demolition Operations

1.2 DEFINITIONS

- a. Certified Safety Professional. A safety manager, safety specialist, or safety engineer that has passed the CSP exam administered by the Board of Certified Safety Professionals.
- b. Competent Person. A competent person is one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.

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- c. Confined Space. A space which by design has limited openings for entry and exit, unfavorable natural ventilation which could contain or produce dangerous air contaminants, and which is not intended for continuous employee occupancy. Confined spaces include, but are not limited to storage tanks, process vessels, pits, silos, vats, degreasers, reaction vessels, boilers, ventilation and exhaust ducts, sewers, tunnels, underground utility vaults, and pipelines.
- d. First Aid. First aid is any one-time treatment, and any follow-up visit for the purpose of observation, of minor scratches, cuts, burns, splinters, and so forth, which do not ordinarily require medical care, even though provided by a physician or registered professional personnel.
- e. Health and Safety Plan (HASP). The HASP is the Navy equivalent Army term of SHP or SSHP used in COE EM-385-1-1. "USACE" property and equipment specified in COE EM-385-1-1 should be interpreted as Government property and equipment.
- f. Lost Workdays. The number of days (consecutive or not) after, but not including, the day of injury or illness during which the employee would have worked but could not do so; that is, could not perform all or part of his normal assignment during all or any part of the workday or shift; because of the occupational injury or illness.
- g. Medical Treatment. Medical treatment includes treatment administered by a physician or by registered professional personnel under the standing orders of a physician. Medical treatment does not include first aid treatment even though provided by a physician or registered personnel.
- h. Multi-employer work site (MEWS). A multi-employer work site, as defined by OSHA, is one in which many employers occupy the same site. The Army considers the prime contractor to be the "controlling authority" for all work site safety and health of the subcontractors.
- i. Operating Envelope. There is an "operating envelope" around any crane, and inside the envelope are the operator, riggers, rigging gear between the hook and the load, the load and the crane's supporting structure (ground, rail, etc.).
- j. Qualified Person. One who, by possession of a recognized degree, certificate, or professional standing, or extensive knowledge, training, and experience, has successfully demonstrated his or her ability to solve or resolve problems related to the subject matter, the work or the project.
- k. Recordable Occupational Injuries or Illnesses. Any occupational injuries or illnesses which result in:
 - (1) Fatalities, regardless of the time between the injury and death, or the length of the illness; or

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- (2) Lost Workday Cases, other than fatalities, that result in lost workdays, or
- (3) Non-Fatal Cases without lost workdays which result in transfer to another job or termination of employment, or require medical treatment (other than first aid) or involve: loss of consciousness or restriction of work or motion. This category also includes any diagnosed occupational illnesses which are reported to the employer but are not classified as fatalities or lost workday cases.
- 1. Safety Officer. The superintendent or other qualified or competent person who is responsible for the on-site safety required for the project. The contractor quality control person cannot be the safety officer, even though the QC has safety inspection responsibilities as part of the QC duties.
- m. Serious Accidents. Any work-related incident, which results in, a fatality, in-patient hospitalization of three or more employees, or property damage in excess of \$200,000.
- n. Significant Accident. Any contractor accident which involves falls of (4 feet) or more, electrical accidents, confined space accidents, diving accidents, equipment accidents, crane accident or fire accidents, which, result in property damage of \$10,000 or more, but less than \$200,000; or when fire department or emergency medical treatment (EMT) assistance is required.
- o. Weight Handling Equipment (WHE) Accident. A WHE accident occurs when any one or more of the six elements in the operating envelope fails to perform correctly during operation, including operation during maintenance or testing resulting in personnel injury or death; material or equipment damage; dropped load; derailment; two-blocking; overload; and collision, including unplanned contact between the load, crane, and/or other objects. A dropped load, derailment, two-blocking, overload and collision are considered accidents even though no material damage or injury occurs. A component failure (e.g., motor burnout, gear tooth failure, bearing failure) is not considered an accident solely due to material or equipment damage unless the component failure results in damage to other components (e.g., dropped boom, dropped load, roll over, etc.).

1.3 SUBMITTALS

Submit the following in accordance with Section 01330, "Submittal Procedures."

SD-01 Preconstruction Submittals

Accident Prevention Plan (APP); G

Activity Hazard Analysis (AHA); G

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Health and Safety Plan (HASP); G

SD-16 Closeout Submittals

Reports

Submit reports as their incidence occurs, in accordance with the requirements of the paragraph entitled, "Reports."

1.4 QUALITY ASSURANCE

1.4.1 Safety Specialist

Provide a Safety Specialist at the work site to perform safety management, surveillance, inspections, and safety enforcement for the contractor. The Safety Specialist shall be the safety "competent person" as defined by COE EM-385-1-1. The Safety Specialist shall be at the work site at all times whenever work is being performed and shall conduct daily safety inspections.

1.4.2 Qualifications

a. Qualifications of Safety Officer:

- (1) Ability to manage the on-site contractor safety program through appropriate management controls.
- (2) Ability to identify hazards and have the capability to expend resources necessary to abate the hazards.
- (3) Must have worked on similar types of projects that are equal to or exceed the scope of the project assigned with the same responsibilities.
- (4) Shall, as a minimum, have attended an OSHA training qualification class including at least 10 hours of classroom instruction.

1.4.3 Meetings

1.4.3.1 Preconstruction Conference

The safety officer shall attend the preconstruction conference.

1.4.3.2 Meeting on Work Procedures

- a. Meet with Contracting Officer to discuss work procedures and safety precautions required by the APP. Ensure the participation of the contractor's superintendent, the quality control, and the CSP.
- b. Meet with Contracting Officer to discuss work procedures and safety precautions required by the HASP. Ensure the participation of the contractor's superintendent, the quality control, and the CSP.

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1.4.3.3 Weekly Safety Meetings

Hold weekly at the project site. Attach minutes showing contract title, signatures of attendees and a list of topics discussed to the QC Contractor Quality Control daily report.

1.4.3.4 Work Phase Meetings

The appropriate AHA shall be reviewed and attendance documented by the Contractor at the preparatory, initial, and follow-up phases of quality control inspection.

1.4.3.5 New Employee Indoctrination

New employees will be informed of specific site hazards before they begin work. Documentation of this orientation shall be kept on file at the project site.

1.4.4 Certifications

1.4.4.1 Accident Prevention Plan (APP)

Submit the APP at least 15 calendar days prior to start of work at the job site, following Appendix A of COE EM-385-1-1. Make the APP site specific. Notice To Proceed will be given after Government finds the APP acceptable.

1.4.4.2 Activity Hazard Analysis (AHA)

Submit the AHA for review at least 15 calendar days prior to the start of each phase. Format subsequent AHA as amendments to the APP. In accordance with contract quality control requirements each AHA will be reviewed during an on-site preparatory inspection.

1.4.4.3 Health and Safety Plan (HASP)

Submit the HASP for projects involving the handling of hazardous materials and allow 15 calendar days for review by Preventive Medicine Department at the Rodriguez Army Health Clinic and the Command Safety Office, DCSPER. Both at the U.S. Army Garrison, Fort Buchanan. The Contracting Officer will act on the HASP only after 15 days Safety Officer reviews.

1.5 ACCIDENT PREVENTION PLAN (APP)

Prepare the APP in accordance with the required and advisory provisions of COE EM-385-1-1 including Appendix A, "Minimum Basic Outline for Preparation of Accident Prevention Plan," and as modified herein. Include the associated AHA and other specific plans, programs and procedures listed on Pages A-3 and A-4 of COE EM-385-1-1, some of which are listed below.

1.5.1 Contents of the Accident Prevention Plan

- a. Name and safety related qualifications of safety officer (including training and any certifications).

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- b. Qualifications of competent and of qualified persons.
- c. Identity of the individual who will complete exposure data (hours worked); accident investigations, reports and logs; and immediate notification of accidents to include subcontractors.
- d. Emergency response plan. Conform to COE EM-385-1-1, paragraph 01.E and include a map denoting the route to the nearest emergency care facility with emergency phone numbers. Contractor may be required to demonstrate emergency response.
- e. Hazardous Material Use. Provisions to deal with hazardous materials, pursuant to the Contract Clause "FAR 52.223-3, Hazardous Material Identification and Material Safety Data." And the following:
 - (1) Inventory of hazardous materials to be introduced to the site with estimated quantities.
 - (2) Plan for protecting personnel and property during the transport, storage and use of the materials.
 - (3) Emergency procedures for spill response and disposal, including a site map with approximate quantities on site at any given time. The site map will be attached to the inventory, showing where the hazardous substances are stored.
 - (4) Material Safety Data Sheets for inventoried materials not required in other section of this specification.
 - (5) Labeling system to identify contents on all containers on-site.
 - (6) Plan for communicating high health hazards to employees and adjacent occupants.
- f. Alcohol and Drug Abuse Plan
 - (1) Describe plan for random checks and testing with pre-employment screening in accordance with the DFAR Clause subpart 252.223-7004, "Drug Free Work Force."
 - (2) Description of the on-site prevention program
- g. Silica Exposure Reduction. The plan shall include specific procedures to prevent employee silica inhalation exposures.
- h. Site Demolition Plan. The safety and health aspects prepared in accordance with Section 02220A, "Site Demolition" and referenced sources.
- i. Training Records and Requirements. List of mandatory training and certifications which are applicable to this project (e.g., personal protective equipment); list of requirements for periodic

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retraining/certification; outline requirements for supervisory and employee safety meetings.

- j. Severe Weather Plan. Procedures of ceasing on-site operations during lightning or upon reaching maximum allowed wind velocities.

1.5.2 Hazardous Material Use

Each hazardous material must receive approval prior to bringing onto the job site or prior to any other use in connection with this contract. Allow a minimum of 10 working days for processing of the request for use of a hazardous material. Any work or storage involving hazardous chemicals or materials must be done in a manner that will not expose government employees to any unsafe or unhealthful conditions. Adequate protective measures must be taken to prevent government employees from being exposed to any hazardous condition that could result from the work or storage. Approval by the Contracting Officer of protective measures and storage area is required prior to the start of the work.

1.6 ACTIVITY HAZARD ANALYSIS (AHA)

Prepare for each phase of the work. As a minimum, define activity being performed, sequence of work, specific hazards anticipated, control measures to eliminate or reduce each hazard to acceptable levels, training requirements for all involved, and the competent person in charge of that phase of work. The appropriate AHA shall be reviewed and attendance documented by the Contractor at the preparatory, initial, and follow-up phases of quality control inspection.

1.7 HEALTH AND SAFETY PLAN (HASP)

Prepare as required by 29 CFR 1910.120 and COE EM-385-1-1.

1.7.1 Qualified Personnel

Retain a Certified Safety Professional (CSP) to prepare the HASP, conduct activity hazard analyses, and prepare detailed plan for demolition, removal, and disposal of materials. Retain the CSP for duration of contract.

1.7.2 Contents

In addition to the requirements of COE EM-385-1-1, Table 28-1, the HASP must include:

- a. Location, size, and details of control areas.
- b. Location and details of decontamination systems.
- c. Interface of trades involved in the construction.
- d. Sequencing of work.
- e. Disposal plan.

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- f. Sampling protocols.
- g. Testing labs.
- h. Protective equipment.
- i. Pollution control.
- j. Evidence of compliance with 29 CFR 1910.120 and 29 CFR 1926.65.
- k. Training and certifications of CSP or other competent persons.

1.8 DRUG PREVENTION PROGRAM

Conduct a proactive drug and alcohol use prevention program for all workers, prime and subcontractor, on the site. Ensure that no employees either use illegal drugs or consume alcohol during work hours. Ensure there are no employees under the influence of drugs or alcohol during work hours. After accidents, collect blood, urine or saliva specimens and test injured employee's influence. A copy of the test shall be made available to the Contracting Officer upon request.

1.9 DUTIES OF THE SAFETY OFFICER

- a. Ensure construction hazards are identified and corrected.
- b. Maintain applicable safety reference material on the job site.
- c. Maintain a log of safety inspections performed.
- d. Attend the pre-construction conference as required.
- e. Identify hazardous conditions and take corrective action. Failure to do so will result in a dismissal from the site, with a work stoppage pending approval of suitable replacement personnel.

1.10 DISPLAY OF SAFETY INFORMATION

Display the following information in clear view of the on-site construction personnel:

- a. Map denoting the route to the nearest emergency care facility with emergency phone numbers.
- b. AHA
- c. A sign indicating the number of hours worked since last lost workday accident.

1.11 SITE SAFETY REFERENCE MATERIALS

Maintain safety-related references applicable to the project, including those listed in the article "References." Maintain applicable equipment manufacturers' manuals.

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1.12 EMERGENCY MEDICAL TREATMENT

Contractors will arrange for their own emergency medical treatment. Government has no responsibility to provide emergency medical treatment. However, if emergency medical care is rendered by Army medical services, charges may be billed to Contractor at prevailing rates established in BUMED Instruction 6320.4 series.

1.13 REPORTS

1.13.1 Accident Reports

- a. For recordable occupational injuries and illnesses, the Prime Contractor shall conduct an accident investigation to establish the root cause(s) of the accident, complete the Army Contractor Significant Incident Report (CSIR) form and provide to the Contracting Officer within 5 calendar days of the accident. The Contracting Officer will provide a copy of the CSIR form.
- b. For a weight handling equipment accident the Prime Contractor shall conduct an accident investigation to establish the root cause(s) of the accident, complete the WHE Accident Report form and provide to the Contracting Officer within 30 calendar days of the accident. The Contracting Officer will provide a blank copy of the WHE accident report form.

1.13.2 Notification

Notify the Contracting Officer as soon as practical, but not later than four hours, of any accident meeting the definition of Recordable Occupational Injuries or Illnesses or Significant Accidents. Information shall include contractor name; contract title; type of contract; name of activity, installation or location where accident occurred; date and time of accident; names of personnel injured; extent of property damage, if any; and brief description of accident (to include type of construction equipment used, PPE used, etc.).

1.13.3 Monthly Exposure Report

Monthly exposure reporting, to the Contracting Officer is required to be attached to the monthly billing request. This report is a compilation of employee-hours worked each month for all site workers, both prime and subcontractor.

1.13.4 OSHA Citations and Violations

Provide the Contracting Officer with a copy of each OSHA citation, OSHA report and contractor response. Correct violations and citations promptly and provide written corrective actions to the Contracting Officer.

1.14 HOT WORK

Prior to performing "Hot Work" (welding, etc.) or operating other flame-producing devices, the Contractor shall request a written permit from the

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Fire Division. CONTRACTORS ARE REQUIRED TO MEET ALL CRITERIA BEFORE A PERMIT IS ISSUED. The Contractor will provide at least two (2) twenty (20) pound extinguishers for normal "Hot Work". All extinguishers shall be current inspection tagged, approved safety pin and tamper resistant seal. It is also mandatory to have a designated FIRE WATCH for any "Hot Work" done at this activity.

- a. Oil painting materials (paint, brushes, empty paint cans, etc.), and all flammable liquids shall be removed from the building at quitting time. All painting materials and flammable liquids shall be stored outside in a suitable metal locker or box and will require re-submittal with non-hazardous materials.
- b. The storage of combustible supplies shall be a safe distance from structures.
- c. Area outside of facility undergoing work shall be cleaned of trash, paper, or other discarded combustibles at the close of each workday.
- d. All portable electric devices (saws, sanders, compressors, extension chord, lights, etc.) shall be disconnected at the close of each workday. When possible, the main electric switch in the facility shall be deactivated.
- e. When starting work in building or areas, Contractors shall require their personnel to familiarize themselves with the location of the nearest fire alarm boxes and place in memory the emergency Fire Division phone number. ANY FIRE, NO MATTER HOW SMALL, SHALL BE REPORTED TO THE BASE FIRE DIVISION IMMEDIATELY.
- d. All portable electric devices (saws, sanders, compressors, extension chord, lights, etc.) shall be disconnected at the close of each workday. When possible, the main electric switch in the facility shall be deactivated.
- e. When starting work in building or areas, Contractors shall require their personnel to familiarize themselves with the location of the nearest fire alarm boxes and place in memory the emergency Fire Division phone number. ANY FIRE, NO MATTER HOW SMALL, SHALL BE REPORTED TO THE BASE FIRE DIVISION IMMEDIATELY.

PART 2 PRODUCTS - NOT APPLICABLE

PART 3 EXECUTION

3.1 CONSTRUCTION

Comply with COE EM-385-1-1, NFPA 241, the accident prevention plan, the activity hazard analysis and other related submittals and activity fire and safety regulations.

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3.2 PRE-OUTAGE COORDINATION MEETING

Contractors are required to apply for utility outages a minimum of 15 days in advance. As a minimum, the request should include the location of the outage, utilities being effected, duration of outage and any necessary sketches. Special requirements for electrical outage requests are contained elsewhere in this specification section. Once approved and prior to beginning work on the utility system requiring shut down, the Contractor shall attend a pre-outage coordination meeting with the Directorate of Contracting (DOC) and the Directorate of Public Works (DPW) to review the scope of work and the lock out/tag out procedures for worker protection. No work will be performed on energized electrical equipment unless proven impassable. Working equipment "hot" must be considered the last option.

3.3 PERSONNEL PROTECTION

3.3.1 Hazardous Noise

Provide hazardous noise signs, and hearing protection, wherever equipment and work procedures produce sound-pressure levels greater than 85 dBA steady state or 140 dBA impulse, regardless of the duration of the exposure.

3.4 ELECTRICAL

3.4.1 Portable Extension Cords

Portable extension cords shall be sized in accordance with manufacturer ratings for the tool to be powered.

3.5 HOUSEKEEPING

3.5.1 Clean-up

All debris in work areas shall be cleaned up daily or more frequently as necessary. Construction debris may be temporarily located in an approved location, however garbage accumulation must be removed each day.

3.5.2 Dust Control

In addition to the dust control measures required elsewhere in the contract documents dry cutting of brick or masonry shall be prohibited. Wet cutting must address control of water run off.

3.6 ACCIDENT SCENE PRESERVATION

For serious accidents, and accidents involving weight handling equipment, ensure the accident site is secured and evidence is protected remaining undisturbed until released by the Contracting Officer.

Install Emergency Generator at USARC
PFC, Luis F. Garcia
Yauco, P.R.

PR017L673P

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3.7 FIELD QUALITY CONTROL

3.7.1 Inspections

Include safety inspection as a part of the daily Quality Control inspections required in Section 01450A, "Contractor Quality Control".

*** END OF SECTION ***